Food and Agriculture Organization of the United Nations

Sustainable Forest Management Impact Program on
DRYLAND SUSTAINABLE LANDSCAPES
One country, one champion

Restoring resilience through non-timber forest products and drought-tolerant crops in Zimbabwe

Enhancing Livelihoods and Ecosystem Sustainability in Dryland Communities for land degradation neutrality

COUNTRY CONTEXT

Zimbabwe, among other countries in Sub-Saharan Africa is grappling with food insecurity, with the bulk of the rural population dependent on smallholder, subsistence, and rain-fed agriculture for livelihoods and food security. Rural communities relying heavily on this form of agriculture are increasingly vulnerable to climate-related shocks and seasonal stressors. Over the last decades, maize has become the dominant staple in Zimbabwe and other sub Saharan countries, due to its potential to produce high yields under the condition of good rainfall and adequate fertilizer input; and due to government promotion through subsidies, input programs, and marketing infrastructure. Over time, this focus on maize has had unintended consequences: it is often grown in monoculture, relies heavily on hybrid seeds, fertilizers, and water inputs, and contributes little to soil fertility or structure. These factors make maize cultivation highly vulnerable to climate shocks and degrade land over time, particularly in dryland regions. To adapt, many are turning to Non-Timber Forest Products (NTFPs) for food and income; however, their full potential remains largely untapped due to poor market access, lack of value addition, and inadequate integration into sustainable land use strategies.

Recently, focus has also slowly been shifting back to traditional grains, as communities look for ways to adapt to climate change and volatile markets. Sorghum and millet for example present a promising alternative due to their high drought-resilience, nutrient-density, and suitability for dryland farming systems. However, the full potential of these value chains still remain untapped due to limited market access, value addition, and inadequate integration into sustainable land use strategies. Despite their historic significance in Zimbabwean food systems, these crops have been marginalized due to an overreliance on maize and shifting consumer preferences.

Together, NTFPs and Neglected and Underutilized Species (NUS) can provide complementary benefits: NTFPs act as buffers during shocks, while NUS like millet and sorghum enhance long-term food security and soil health. Integrating both into diversified farming systems can strengthen ecosystem resilience and improve household nutrition and income.

Against this backdrop, the FAO-led Dryland Sustainable Landscapes Impact Program (DSL-IP) with support from the government of Zimbabwe and the following implementing partners, Environmental management agency, World Vision, Forestry commission, Zimbabwe Parks and wildlife and Community technology development committees are working with Zimbabwe Forest and Farm Producer Organizations (FFPOs) and Farmer field schools among other community based committees to strengthen and upscale this innovative and farmer-owned practice. Championing this approach, Zimbabwe serves as a model for other countries in the region grappling with similar management

KEY FACTS

Sustainable Landscapes Production Framework

A framework to harness positive agriculture-forestry-energy linkages by providing capacity development and income generating opportunities.

Geographic scope

Save and Rude Basin, Zimbabwe.

Source: United Nations Geospatial. 2011. Map of Zimbabwe. In: United Nations. New York, USA, UN. [Cited 4 July 2024]. https://www.un.org/geospatial/content/zimbabwe

Note: Refer to the disclaimer on the last page for the names and boundaries used in this map.

Target group

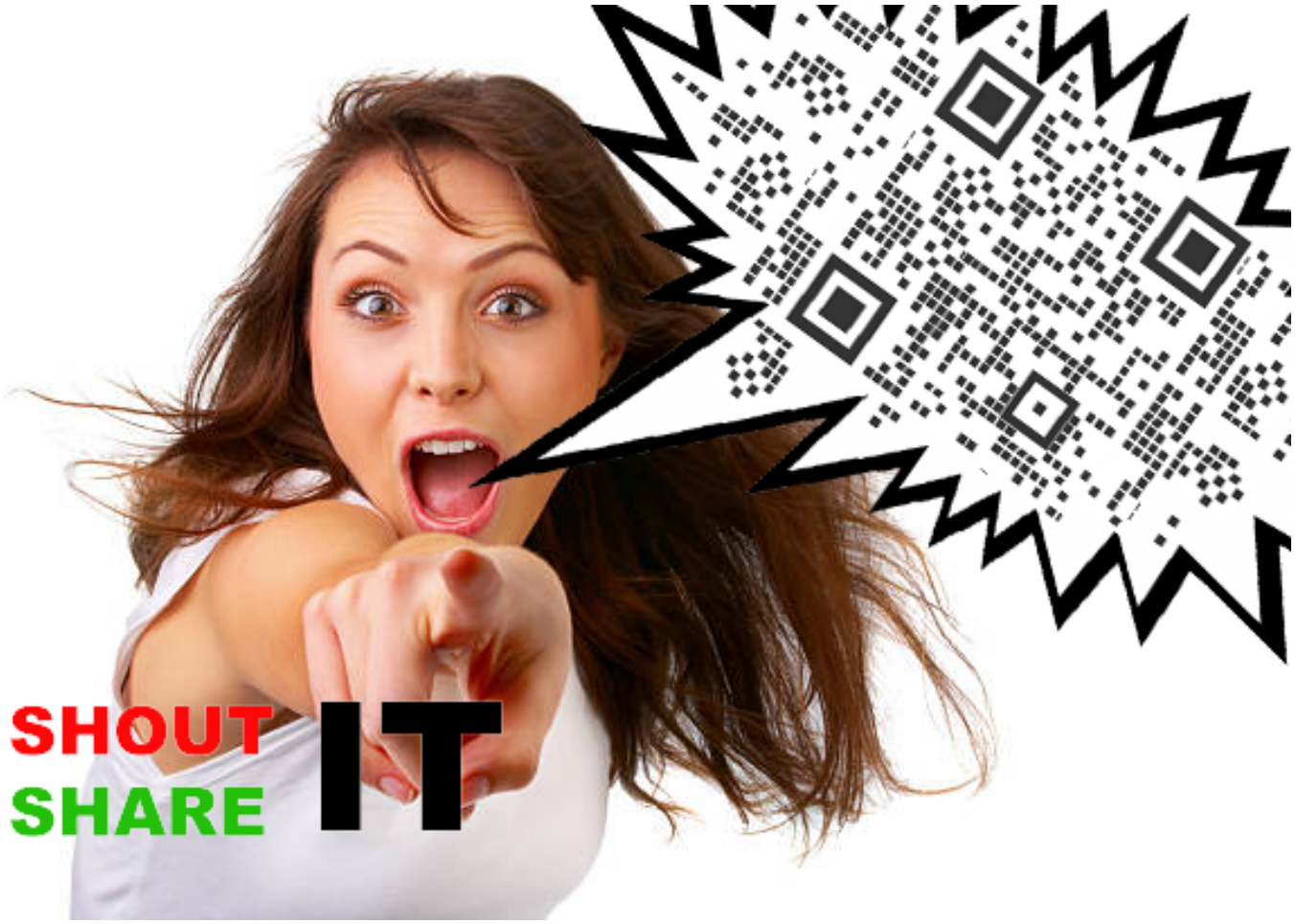
Forest and Farm Producer Organizations (FFPOs) and Community members

Gender

Based on the assessments undertook in the landscape 32 percent of households are female led. The approach focuses on gender-inclusive interventions to empower women and ensure equitable participation in value chains.

Type of shock/crisis

69 percent of farmers have observed soil degradation processes in the last 3 years (deforestation, mainly fertility decline and gully erosion). Most households have experienced climatic shocks in the last few years, with drought being the most frequently experienced and most damaging shock.


SHOUT
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challenges.

Through the provision of tailored technical capacity building, the DSL-IP is committed to working with land user groups and local Government institutions to improve livelihoods, meet Land Degradation Neutrality (LDN) targets, and promote drought resilience and sustainable forest and land management practices. This includes revitalizing millet production by addressing misconceptions, enhancing seed access, and establishing market connections.

Targeted interventions start with understanding the landscape - ILAM ensures decisions are backed by evidence.

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EVIDENCE-BASED, TARGETED AND TAILORED INTERVENTIONS

To ensure interventions are tailored and impactful, the DSL-IP is implementing the Integrated Landscape Assessment Methodology (ILAM) - a multi-level approach combining geospatial layers, focus groups discussions, field assessments, and household-level data on resilience and behavior. At household level, assessments are guided by the SHARP+ tool, capturing how rural households manage natural resources and adapt to climate risks in Chimanimani, Chipinge, Buhera, Bikita,Chivi, Zaka, Masvingo, and Shurugwi.

The graph below, based on over ILAM-SHARP+ surveys conducted in over 514 households, illustrates the benefits observed by those already practicing sorghum and millet, as well as key challenges and barriers identified by households in Zimbabwe's targeted Miombo-Mopane landscapes.

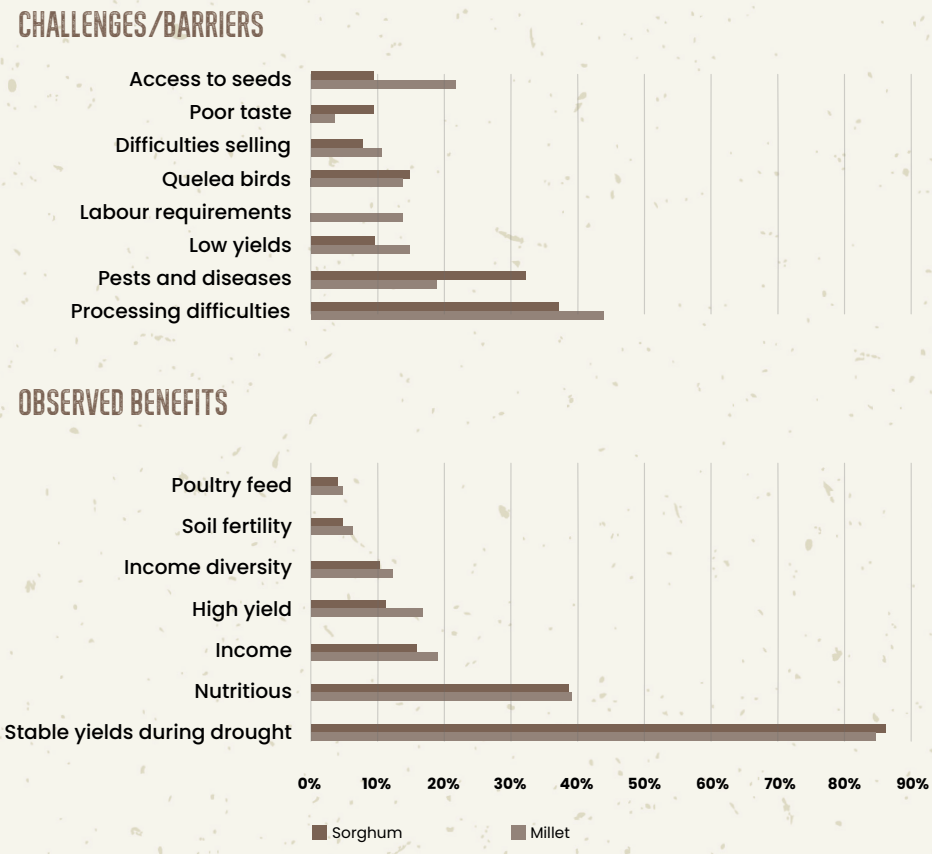

Figure 1: Motivations and barriers to cultivating sorghum and millet among farmers in the project landscapes (n=514)
Source: Author's elaboration as result of SHARP+ Behavioural Change Household Survey carried out in the Chimanimani, Chipinge, Buhera, Bikita,Chivi, Zaka, Masvingo, and Shurugwi districts of Zimbabwe)

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STRENGTHENING AND UPSCALING MILLETS AND NTFPS: THE DSL-IP IN ZIMBABWE

The information and evidence gathered from project landscapes is used by the country project, in close collaboration with the Global Coordination project, as input in the DSL-IP Sustainable Landscape Production Framework (SLPF), an innovative approach to achieving LDN at landscape level composed of three key priority areas of intervention:

- **Community Seed Banks**
- **Farmer Field Schools**
- **Forest and Farm Facility**

The framework is implemented with direct support from FAO's mobilized knowledge hubs under its Community of Practices, and executed with support from national and regional partners[1] , ensuring technical recommendations, best practices, and lessons from previous projects are delivered to government officers, technical experts, service providers, landscape actors, and farmers in the landscape. They enable the scaling out of sustainable land and forest management practices, including improved production and conservation (through Farmer Field Schools and Community Seed Banks), business incubation, value addition, and market access (through Forest and Farm Facility).

By integrating these mechanisms, the program directly supports the sustainable upscaling of the NUS sorghum and millet and NTFPs like Baobab and Marula, promoting improved access to climate-resilient seeds, strengthening knowledge on intercropping and soil restoration, and building market linkages for these underutilized crops. This not only helps diversify production systems but also enhances community resilience to climate shocks while restoring degraded landscapes.

Balancing agriculture and conservation - productive landscapes can support both people and nature.

Through the DSL-IP Regional Exchange Mechanism (REM), a coordination structure dedicated to the Miombo-Mopane eco-region, the technologies, practices, and learnings from Zimbabwe's implementation of the SLPF are out-scaled to other countries in the region, enhancing the combined knowledge of the program, and fostering South-South cooperation and coordination.

[1] The regional partners who are supporting the implementation of the Sustainable Landscapes Production Framework are the Community Technology Development Trust (CTDT), the International Institute for Environment & Development (IIED) and the International Institute for Rural Reconstruction (IIRR)

EXPECTED IMPACT OF NTFPS AND NUS

The promotion of sorghum, millet and NTFPs such as baobab and marula were selected as a core theme of the DSL-IP country project based on its potential to address multiple landscape-level priorities through an integrated, evidence-based approach. To assess the relevance and transformative potential of this theme within the broader landscape management strategy, three key impact criteria were applied:

- **Livelihoods and gender:** Can the proposed practices provide inclusive economic opportunities and reduce livelihood vulnerabilities, particularly for rural women and youth?
- **Land Degradation Neutrality (LDN):** Do the proposed practices contribute to restoring land productivity, reduce degradation, and increase ecosystem functionality?
- **Upscaling potential:** Is there scope for expanding or replicating the proposed practices in other landscapes or contexts within Botswana or beyond?

The following section outlines how these value chains can contribute to each of these impact areas.

	FARMING SYSTEM CHALLENGE	COMMODITY POTENTIAL FOR SYSTEM TRANSFORMATION	HOW THE SUSTAINABLE LANDSCAPES PRODUCTION FRAMEWORK SUPPORTS DELIVERY OF BENEFITS
IMPACT AREA: **Livelihoods and Gender Equality**			
NON-TIMBER FOREST PRODUCTS (NTFPS)	Limited and climate-vulnerable income sources for rural communities.	NTFPs provide communities with alternative income sources that are less vulnerable to drought than cropping systems (Ouedraogo *et al.*, 2022) and their products can be harvested and processed into a variety of marketable goods, including oils, medicinal products, fruits, and beverages.	**Forest and Farm Facility (FFF)** helps organize producer groups for collective marketing and value addition, ensuring NTFPs become reliable income streams.
	Low household dietary diversity	NTFPs provide communities with alternative income sources that are less vulnerable to drought than cropping systems (Ouedraogo *et al.*, 2022) and their products can be harvested and processed into a variety of marketable goods, including oils, medicinal products, fruits, and beverages.	**Farmer Field Schools (FFS)** provides nutrition-sensitive training and awareness, showing households how to better integrate NTFPs into diets for improved food security.
	Gender inequalities in agricultural and economic participation.	NTFPs also play a significant role in empowering women, as they are often the primary harvesters and processors of these products. By strengthening their economic role, women gain greater autonomy and influence within their communities, advancing gender equality and inclusive development.	**FFF:** strengthens women-led cooperatives and access to markets; **FFS:** promotes women's technical and entrepreneurial skills through participatory learning. **FFS:** promotes women's technical and entrepreneurial skills through participatory learning.
	Lack of agency and empowerment of smallholder farmers in value chains.	Expanding NTFP value chains creates entrepreneurship and employment across production, processing, and marketing.	**FFF:** builds organizational capacity for smallholders to influence value chains and negotiate better terms.

	FARMING SYSTEM CHALLENGE	COMMODITY POTENTIAL FOR SYSTEM TRANSFORMATION	HOW THE SUSTAINABLE LANDSCAPES PRODUCTION FRAMEWORK SUPPORTS DELIVERY OF BENEFITS
IMPACT AREA: **Livelihoods and Gender Equality**			
MILLET AND SORGHUM	Reliance on maize despite its poor performance in drylands.	Both crops offer stable yields under dry and degraded conditions.	**FFS:** trains farmers in resilient dryland practices, encouraging adoption of millet and sorghum intercropping systems and teaching farmers best practices for cultivation. **Community Seed Banks (CSBs):** secure access to adapted varieties.
	Seasonal food insecurity and poor diets.	Sorghum and millet are nutrient-dense, enhancing dietary diversity and nutrition.	**FFS:** promotes dietary diversification and supports household-level nutrition awareness through farmer-to-farmer learning.
	High input use and soil degradation in mainstream systems.	These crops require fewer inputs than e.g. maize and can be intercropped to boost soil health and farm productivity.	**FFS:** supports experimentation on low-input and soil-restoring cropping systems most adapted to the area.
	Underutilized potential in dryland farming systems; Fragmented support for seed systems and extension.	Create employment and entrepreneurship opportunities across the value chain, from seed systems to product marketing, as both crops have growing potential in local and niche markets.	**FFF:** supports collective entrepreneurship and market engagement. **CSB:** secures access to adapted varieties.
IMPACT AREA: **Land Degradation Neutrality**			
NON-TIMBER FOREST PRODUCTS (NTFPS)	Unsustainable land expansion due to declining farm productivity.	Income from NTFPs reduces pressure to clear additional land and incentivizes tree preservation	**FFF:** strengthens community-based enterprises that depend on tree conservation, making standing trees more valuable than clearing land.
	Low vegetation cover and biodiversity loss in degraded drylands.	The sustainable management and use of NTFPs contribute to biodiversity conservation. By valuing and protecting trees like Baobab and Marula, communities are incentivized to preserve forest ecosystems due to their increased economic value (Ouedraogo et al., 2022).	**FFS:** shares knowledge on sustainable harvesting and regeneration of NTFPs, supporting biodiversity-friendly practices.
	Increasing climate variability threatens agricultural reliability.	In dryland areas, where soil fertility is often low and water is scarce, shifting some economic reliance from agriculture to NTFP production helps alleviate pressure on already degraded lands. This contributes to land restoration and the sustainable use of agricultural spaces, helping to avoid further desertification.	**FFF:** supports diversification into NTFPs as a livelihood strategy; **FFS:** enables adaptive learning on integrating NTFPs. with farming to spread climate risks.
MILLET AND SORGHUM		Millets and sorghum can thrive in harsh climatic conditions, including drought and poor soil. This resilience ensures stable yields, reducing the need for agricultural expansion to maintain productivity.	**CSB:** provides climate-resilient seed varieties at community level, securing farmer access even under stress conditions.

	FARMING SYSTEM CHALLENGE	COMMODITY POTENTIAL FOR SYSTEM TRANSFORMATION	HOW THE SUSTAINABLE LANDSCAPES PRODUCTION FRAMEWORK SUPPORTS DELIVERY OF BENEFITS
IMPACT AREA: **Upscaling of Good Practices**			
NON-TIMBER FOREST PRODUCT, MILLET AND SORGHUM	NTFPs and NUS remain underutilized despite high climate resilience.	Strong potential for upscaling in the Miombo-Mopane region, where many communities already rely on wild harvests of NTFPs and grow millet or sorghum varieties.	
	Fragmented value chains limit uptake.	DSL-IP supports integrated land use planning technical training, and market access to enable broad adoption. Farmer aggregation models – such as producer cooperatives and women-led groups – offer scalable pathways for increasing bargaining power, improving quality control, and securing market linkages.	
	Scarcity of appropriate planting material and low agricultural diversity.	Expansion of inclusive seed systems by building up local seed reproduction capacities and linking community seed banks with national breeding programs.	
	Low and volatile prices for small-scale producers	Development of standards and certification to access premium and ethical trade markets globally.	

Table: Pathways to Land Degradation Neutrality: How Sustainable NTFP and NUS Production Can Restore Dryland Ecosystems
Source: Author's elaboration.

Regional collaboration is key. Shared lessons drive sustainable landscapes beyond borders.

Even with these widely recognized benefits, the full potential of NTFPs and the NUS millet and sorghum remains underutilized due to challenges such as weak market linkages, limited value addition, and lack of awareness of the economic benefits NTFPs can offer. There are however strong opportunities to scale up sustainable millet and NTFP-based production systems in Zimbabwe and across the wider Miombo-Mopane ecoregion. Many smallholders already cultivate drought-tolerant crops like millet and sorghum or rely on wild-harvested products such as Baobab and Marula during lean seasons. By strengthening the value chains of these underutilized yet climate-resilient resources, the DSL-IP supports communities in diversifying livelihoods, improving nutrition, and restoring degraded landscapes.

To overcome identified barriers and build on successes, the DSL-IP is facilitating South-South learning through its REM. This cross-border engagement enables producer organizations, technical experts, and policymakers to co-develop scalable, evidence-based solutions rooted in shared ecological realities and community-driven priorities.

In conclusion, the promotion of drought-resilient NUS such as millet and sorghum, alongside sustainable NTFP harvesting, represents a transformative opportunity for the drylands of Zimbabwe and beyond. As these practices are scaled through regional cooperation and policy integration, they can help secure food systems, protect biodiversity, strengthen local economies, and foster land degradation neutrality across the Miombo-Mopane woodlands - building climate resilience and working towards LDN across borders.

REFERENCES

Asogwa, I. S., Ibrahim, A. N. and Agbaka, J. I. 2021. African baobab: Its role in enhancing nutrition, health, and the environment. Trees, Forests and People, 3.

Mariod, A. A. and Abdelwahab, S. I. 2012. Sclerocarya birrea (Marula), an African tree of nutritional and medicinal uses: a review. Food Reviews International, 28(4).

Ouedraogo, D., *et al.* 2022. Non-timber forest products–A key tool to improve food security and nutrition in the drylands of Africa. FAO.

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